

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) An isothermal process for the dehydrogenation of alkanes to the corresponding alkenes over a catalyst bed comprising a dehydrogenation-active catalyst comprising one or more elements of transition group VIII, wherein the dehydrogenation is carried out at a temperature from 400-700°C, wherein heat is introduced from the outside into the reacting gas mixture by heating the reactor externally, and wherein the catalyst bed comprises a catalytically inactive, inert diluent material.

2. (Original) A process as claimed in claim 1, wherein the catalytically inactive, inert diluent material is selected from the group consisting of the oxides of elements of main groups II, III and IV, transition groups III and IV and V and mixtures thereof and nitrides and carbides of elements of main groups III and IV.

3. (Previously Presented) A process as claimed in claim 1, wherein the catalytically inactive, inert diluent material is selected from the group consisting of magnesium oxide, aluminum oxide, silicon dioxide, steatite, titanium dioxide, zirconium dioxide, niobium oxide, thorium oxide, aluminum nitride, silicon carbide, magnesium silicate, aluminum silicate, clay, kaolin, pumice and mixtures thereof.

4. (Previously Presented) A process as claimed in claim 1, wherein the catalytically inactive, inert diluent material has a BET surface area of $< 10 \text{ m}^2/\text{g}$.

5. (Previously Presented) A process as claimed in claim 1, wherein the catalytically inactive, inert diluent material has a coefficient of thermal conduction of $> 0.04 \text{ W}/(\text{m} \times \text{K})$.

6. (Previously Presented) A process as claimed in claim 1, wherein the space-time yield based on alkene formed is limited to $7.0 \text{ kg}/(\text{kg}_{\text{bed}} \times \text{h})$ by the presence of the catalytically inactive diluent material in the catalyst bed.

7. (Previously Presented) A process as claimed in claim 1, wherein the catalytically inactive, inert diluent material is present in the form of shaped bodies selected from the group consisting of pellets and extrudates having an average diameter of from 2 to 8 mm, an average height of from 2 to 16 mm, with the height being from 0.5 to 4 times the diameter, rings and hollow extrudates having an average external diameter and an average height of from 6 to 20 mm, with the height being from 0.5 to 4 times the diameter and the wall thickness being from 0.1 to 0.25 times the diameter, and spheres having an average diameter of from 1 to 5 mm.

8. (Previously Presented) A process as claimed in claim 1, wherein the proportion of empty space in the bed is at least 30%.

9. (Previously Presented) A process as claimed in claim 1, wherein the dehydrogenation-active catalyst comprises one or more elements of transition group VIII, one or more elements of main groups I and/or II, one or more elements of transition group III including the lanthanides and actinides and one or more elements of main groups III and/or IV on an oxidic support.

10. (Previously Presented) A process as claimed in claim 1, carried out in a tube reactor or a shell-and-tube reactor.

11. (Previously Presented) A process as claimed in claim 1, in which propane is dehydrogenated.